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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,788	02/06/2002	Timothy Warner	02023	4514

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EXAMINER	
MORILLO, JANELL COMBS	
ART UNIT	PAPER NUMBER
1742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/066,788	WARNER, TIMOTHY	
	Examiner	Art Unit	
	Janelle Combs-Morillo	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-11 and 25-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-11 and 25-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 12, 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6, 7, 9-10, 25-30, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ponchel et al (US 4,954,188).

Ponchel teaches a method of producing a high strength Al-Zn-Cu-Mg alloy by casting an ingot (column 3 line 24), homogenizing, hot working by rolling (column 3 line 12, 31), solution heat treating (column 3 lines 25-26, 31, 45), and aging in a single stage at 270-285°F for 6-30 hrs (abstract, for a teq= 20-227 hrs), which overlaps the presently claimed method aging time and temperature equivalence. Ponchel teaches said alloy comprises (in weight%): 5.9-8.2% Zn, 1.5-4.0% Mg, 1.5-3.0% Cu, and 0.5% max. Zr, Mn, Ti, balance aluminum (abstract, column 7 lines 12-14). Ponchel teaches high compressive strengths of typically 88.5 ksi (610 MPa, ex. 9 Table

3, teq=194) can be achieved (see Table III), by using aging temperatures and times within the presently claimed T & teq. Ponchel teaches that compressive strength is dependent on aging time and temperature (result effective variable), and aging at times and temperatures within the disclosed ranges obtain excellent mechanical properties, including very high compressive YS, and within the scope of "maximize compression yield strength". More particularly, Ponchel teaches an example within the aging time and temperature ranges, and wherein said example achieves a very high compressive YS of 610 MPa (teq=194), compared to the maximum compression YS achieved by the instant invention of 615 MPa (ex. E, Table 2) for a teq=130, as well as higher than the CYS=608 MPa (teq=222) for ex. G of the invention.

Because Ponchel et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum/very high strength properties), given the disclosure of Ponchel.

Changes in concentration or temperature will generally not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical, i.e. they produce a new and unexpected result. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages"). A particular parameter must first be recognized as a result-

effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

Because Ponchel teaches substantially overlapping aging time and temperature ranges, it is held that Ponchel has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 2-6, 25, 28, 32, 33, as stated above, Ponchel teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Ponchel because Ponchel finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-10, Ponchel teaches aging, which overlaps the presently claimed aging temperature ranges and equivalent times.

Concerning claims 26, 27, 29, and 30, though Ponchel does not specify a metallurgical temper between two known temper designations, because Ponchel teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

4. Claims 1-6, 7, 9-12, 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt, Jr (US 5,221,377).

Hunt teaches a method of aging applicable to 7000 series alloys (see Hunt at Table 3), said 7000 series alloy comprising 7.6-8.4% Zn, 1.8-2.2% Mg, 2-2.6% Cu, and $\leq$ 0.5% Zr, V, Hf, which overlaps the presently claimed alloying ranges as well as the alloys claimed in cl. 6. Hunt

teaches said heat treatment process obtains an improved combination of strength, toughness, and corrosion resistance (abstract) and is used in aerospace applications such as upper wing members (column 1 lines 21-23, column 2 lines 1-3) with high strength and excellent corrosion resistance (column 2 lines 15-18). Said aging treatment taught by Hunt includes: I) aging at 175-285°F (79.4-140.5°C) for ≥ 2hrs, II) aging at 300-350°F (148.9-176.7°C) for ≥ 5hrs, which substantially overlaps the presently claimed time and temperature ranges. In Table 3, Hunt teaches that compression YS is maximized for examples 1, 3, 7 and 8, which have the following aging treatments, teq, and CYS:

Ex. 1	250 °F for 24 hr	360 °F for 0.75 hr	teq=219.8 hr	CYS= 94.4
Ex. 3	250 °F for 24 hr	370 °F for 0.5 hr	teq=223 hr	CYS= 96.1
Ex. 7	250 °F for 24 hr	375 °F for 0.25 hr	teq=146.8 hr	CYS= 98.8
Ex. 8	250 °F for 24 hr	375 °F for 0.42 hr	teq=230 hr	CYS= 95.2

Said aging steps taught by Hunt fall within the teq of instant claims 1 and 7. Additionally, the broad ranges taught by Hunt overlap the two step aging treatment of instant claim 11. Hunt teaches forming said alloys by conventional steps of casting, homogenizing, hot working by any method (including hot rolling, column 5 line 44), solution heat treatment, hardening, stretching (column 5 lines 54-69, column 6 lines 1-16), followed by the above mentioned aging sequence. Though Hunt prefers hot working by extrusion in the above examples, Hunt clearly teaches that any known hot working technique is suitable to hot work said alloy, including hot working by rolling into sheet, plate, rod, or bar stock (column 5 lines 44-46). Because Hunt teaches a process of working and heat treating w duel aging steps a 7xxx alloy with overlapping process

parameters and alloying ranges, it is held that Hunt has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 2-6, 25, 28, 32, 33, as stated above, Hunt teaches an Al-Zn-Mg-Cu alloy that overlaps or is a close approximation of the presently claimed alloying ranges. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Hunt because Hunt finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-10, Hunt teaches aging, which overlaps the presently claimed aging temperature ranges and equivalent times.

Concerning claims 26, 27, 29, and 30, though Hunt does not specify a metallurgical temper between two known temper designations, because Hunt teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

Concerning claim 31, the broad aging profile taught by Hunt overlaps the presently claimed second aging temperature range.

Response to Arguments/Amendments

5. In the response filed on December 12, 2006, the claim amendment filed October 12, 2006 was entered amending claim 11 and adding new claims 31-33. Additionally, applicant submitted various arguments traversing the rejections of record. The examiner agrees that no new matter has been added.

6. The declaration under 37 CFR 1.132 filed December 12, 2006 is insufficient to overcome the rejection of claims based upon Ponchel as set forth in the last Office action because: though declarant shows that it is likely that the compressive YS for Ponchel at Ex. 6 is an error, it is not clear that applicant has achieved specific unexpected results with respect to the closest prior art of Ponchel or Hunt.

Aging time and temperatures within the overlapping ranges taught by the prior art, are held to be result effective variable, wherein the expected result is formation of strengthening precipitates. It is unclear that applicant's invention achieves a compressive YS unexpectedly superior than the prior art. More particularly, Ponchel teaches an example within the aging time and temperature ranges (teq=194), and wherein said example achieves a very high compressive YS of 610 MPa, compared to the maximum compression YS achieved by the instant invention of 615 MPa (ex. E, Table 2) for a teq=130 (as well as higher than the CYS=608 MPa for ex. G of the invention with a teq=222). Similarly, Hunt teaches a method of aging using time and temperature parameters overlapping the instantly claimed parameter, and achieves values of CYS superior to those achieved by the instant invention.

7. Applicant has not clearly shown specific unexpected results with respect to the prior art of record or criticality of the instant claimed range (wherein said results must be fully commensurate in scope with the instantly claimed ranges, etc. see MPEP 716.02 d). Though claim 5 is found to be commensurate in scope with the examples in the originally filed specification, it is not clear that the CYS results (Fig. 4, etc.) show an unexpectedly high compression yield strength for said alloy, in view of the prior art's teachings. While said results display a non-linear relationship, they are not clearly unexpected in view of the prior art's

teachings of aging in order to obtain very high CYS values, within the scope of 'maximized' values.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCM
March 15, 2007

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SUPERVISORY PATENT